

¹ Pursuant to Civil Local Rule 10.5, the Allen Plaintiffs and the United States agreed to a limit of 100 pages for exhibits in response to the United States' motion.

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I. INTRODUCTION

Before this case began, and before there were the ‘*Allen* Plaintiffs,’ Dr. Chief secured \$1.23 million in national grants to conduct interdisciplinary research on the social impacts of the Gold King Mine Spill (“Spill”) on members of the Navajo Nation. **Ex. 1** (Expert Report of Dr. Chief at 3). The purpose of Dr. Chief’s research in the Gold King Mine Spill/Diné Exposure Project (“Diné Exposure Project”) was to understand the social impacts of the Spill on three Navajo communities along the San Juan River (“River”) and the risk perception within those communities. **Ex. 2** (Depo. of Dr. Chief, at 62:12-24, 183:21–186:21; 290:25–292:23, 301:23–304:3, 324:20–325:20). The Diné Exposure Project was a multi-faceted, transdisciplinary, community-led research project funded by the National Institute of Environmental Health Sciences, conducted in partnership with the Navajo Nation under the oversight of the Navajo Nation Human Research Review Board (“HRRB”), the University of Arizona Human Research Board, and the State of Arizona. *Id.* at 65:9–66:5; 74:14–77:9; 78:3-17; 157:8-25; 182:8-11. The Diné Exposure Project was submitted as a dissertation to the University of Arizona by a doctoral student of Dr. Chief’s, Dr. Yoshira Ornelas Van Horne, in 2019 and after a vigorous peer-review process, was accepted for publication in the *Journal of Exposure Science and Environmental Epidemiology*.¹ *See id.* at 144:11–146:23; 239:18–240:15; 402:11-17 (“And this data has been quality checked and peer-reviewed, reviewed by our -- not only our team but also the [HRRB], as well as with the publications that we have, they went through peer review. So they have gone through several different reviews. And the data collection is based on the foundations of -- you

¹ *See* Yoshira Ornelas Van Horne, Karletta Chief, et al., *Impacts to Diné activities with the San Juan River after the Gold King Mine Spill*, 31 *J Expo Sci Environ Epidemiol* 852 (2021), available at <https://doi.org/10.1038/s41370-021-00290-z> (last accessed on 06/09/2020).

know, on experimental design that was implemented.”). Dr. Chief is a co-author of the published article.

Dr. Chief’s expert opinions in this case are based on (1) this independent, peer-reviewed research that she conducted concerning the risk perception and impact of the Spill on the use and engagement with the River within three Navajo Nation communities, of which the *Allen* Plaintiffs are a part, and (2) her specialized knowledge of the unique agricultural, cultural, social, historical, and religious relationship these communities have with the River. *Id.* at 20:16–21:6; 45:6–20; 145:25–146: 275:5–18; 349:22–350:1; 367:21–368:4; 382:15–20. Specifically, Dr. Chief’s opinions are derived from three different data collection efforts by the Diné Exposure Project’s interdisciplinary team, including 1) focus groups in 2016 which collected qualitative data regarding community concerns and impacts, 2) household questionnaires in 2016 which collected quantitative data regarding risk perception and the impact on community members’ use and engagement with the River in the year following the spill, and 3) farmer surveys which collected data on the impact of the spill on agricultural farming three years after the spill. *Id.* at 328:3–330:16; 336:8–338:5; 338:17–339:16; 381:1–20; 567:14–22; 581:1–582:11; 600:14–21.

Dr. Chief’s expert opinion as a socio-hydrologist provides relevant and helpful analysis of material issues in this case, including analysis of the following social impacts caused by the Spill:

1. Disruption of the Navajo people’s relationships with the River;
2. The disruption of the Navajo people’s ability to farm and ranch;
3. The stigma surrounding the quality of agricultural products from Navajo communities along the River;
4. The impact on the ability of Navajo people to engage in and pass on knowledge related to cultural and religious practices related to the River and ceremonial plants;
5. The creation of high-risk perception among Navajo people of engaging with the River;

6. Relevant historical context necessary to understand the unique and complex impact of the spill on these Navajo communities, including deepened distrust of governments and the amplification of historical trauma.

Ex. 1 at 2-3.

The United States argues that (i) Dr. Chief is not qualified, (ii) that her opinions are not relevant or helpful to the factfinder, and (iii) that her opinions are unreliable. The United States attempts to confine Dr. Chief's expertise to hydrology (her education) and then disregards her other qualifications based on her knowledge, skill, experience, and training as unhelpful that support her expert opinions in this case.

Dr. Chief's opinions are clearly relevant and helpful to the trier of fact. The United States, along with the other Defendants in this litigation, have made an issue out of whether the *Allen* Plaintiffs' decisions were reasonable. *See* Dkt. 1475 at 17-18 (Weston Solutions, Inc. arguing that disruptions to water supply amount to a "personal choice" asserting that "interference with the use of property, if any, that the individual plaintiffs suffered due to the spill was limited in duration."). According to Defendants, the *Allen* Plaintiffs should have trusted the United States and the Environmental Protection Agency ("EPA") when they told them that the River was safe to use to irrigate their crops and water their animals and that any *Allen* Plaintiff who "refused" to use the water acted unreasonably and failed to mitigate their damages. *See id.* Dr. Chief's opinions will help the trier of fact better understand, among other things, the cultural and historical context that were, and are, at play regarding the *Allen* Plaintiffs' decisions.

The misunderstanding at the core of the United States' argument is how Dr. Chief's testimony bears on the *Allen* Plaintiffs' noneconomic damages. *See* Motion at 1 ("Most strikingly, Dr. Chief's opinions are irrelevant and unhelpful to the trier of fact because they do not address the pertinent factual inquiry in this case—whether any individual *Allen* Plaintiff

suffered annoyance, disturbance, or loss of use and enjoyment.”). It is true, as the United States posits, that Dr. Chief did not perform an “analysis touching upon the individual *Allen* Plaintiffs.” Motion at 1, 12. That is because it would have been improper for her to do so as the *Allen* Plaintiffs will testify about their own experiences to support their claims for annoyance, disturbance, and loss of use and enjoyment. Dr. Chief’s opinions and culturally-anchored perspective will be helpful to the jury to assess the reasonableness of the *Allen* Plaintiffs’ decisions and conduct. Without Dr. Chief’s testimony, the jury will lack the relevant background information necessary to properly determine the reasonableness of noneconomic damages.

Lastly, the United States’ argument concerning reliability are meritless and designed to circumvent the adversarial process by relying on issues appropriate for cross-examination for unsupported claims regarding inadmissibility. *See Fortune Dynamic, Inc. v. Victoria’s Secret Stores Brand Mgmt., Inc.*, 618 F.3d 1025, 1037-38 (9th Cir. 2010) (Holding that the “survey has a number of shortcomings, including the fact that it was conducted over the internet (thereby failing to replicate real world conditions), may have been suggestive, and quite possibly produced counterintuitive results. But these criticisms, valid as they may be, go to issues of methodology, survey design, reliability, ... [and] critique of conclusions,’ and therefore ‘go to the weight of the survey rather than its admissibility.” (Internal citation and quotation marks omitted)). Accordingly, the Court should deny the Motion and permit Dr. Chief to testify at trial.

II. ARGUMENT

A. Dr. Chief is Qualified to Render Her Opinions.

“It is by now well established that Fed. R. Evid. 702 imposes on a district court a gatekeeper obligation to ‘ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.’” *Dodge v. Cotter Corp.*, 328 F.3d 1212, 1221 (10th Cir. 2003) (citing

Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993)). This requires evaluations of “the reasoning and methodology underlying the expert’s opinion, and determin[ation] whether it is both scientifically valid and applicable to a particular set of facts.” *Dodge*, 328 F.3d at 1221. Rule 702 specifies that experts may be qualified by knowledge, skill, experience, training, or education. Fed. R. Evid. 702. “Regardless of the specific factors at issue, the purpose of the *Daubert* inquiry is always ‘to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.’” *Dodge*, 328 F.3d at 1222-23 (10th Cir. 2003) (citing *Kumho Tire*, 526 U.S. at 152).

Dr. Chief has specialized knowledge of the cultural, social, and religious significance of the River to members of the Navajo communities she studied and the impact of the Spill both as a community member and as a researcher with extensive experience in conducting culturally sensitive, community-led research initiatives. **Ex. 2** at 20:17–21:6 (“Q. So do I understand that you hold yourself out as an expert on Navajo cultures specifically? A. Yes, I do.”); 328:3–330:16; 601:21–602:19. Dr. Chief explained:

I am culturally informed as a Navajo scientist who grew up on the Navajo Nation, immersed in the Navajo culture, as well as living it myself on a daily life. So although I don’t have a Ph.D. in indigenous study -- studies, I am Navajo, and I do -- I was raised in -- on the Navajo Nation and immersed in my culture and continue to live that culture, as well as belong to a community where I continually learn on a daily basis from my elders and friends, and other community members about the Navajo culture in general. So I think in my lived experiences, I do have that knowledge. But in the western world, I do not have a Ph.D. in indigenous studies. So that’s the difference.

Id. at 602:4-19.

Dr. Chief is an experienced and credentialed expert in her field of socio-hydrology, with a focus in vadose zone hydrology, water quality, watershed characterization, climate change,

water policy and management, and mining impacts; she also has a national profile for her work on community-based tribal research. **Ex. 1** at 3, **Ex. 2** at 16:16-20.² In her research, she collaborates with social, environmental, and health scientists and incorporates Indigenous knowledge, practices, perspectives, and values. **Ex. 1** at 2. Dr. Chief testified that she “typically do[es] interdisciplinary research in collaborations with other research -- researchers, including those that have expertise in psychology and social sciences. And in those collaborations, we do research related to social science.” **Ex. 2** at 15:5-9. The reliability of Dr. Chief’s methodology and the conclusions drawn from her research are readily apparent—her research was funded by the National Institute of Health, *id.* at 19:24-20:5, involved the University of Arizona, Northern Arizona University, Diné College, and Fort Lewis College, **Ex. 1** at 3, was approved and monitored by the HRRB, **Ex. 2** at 22:2-15, 111:25-112:3, and was peer-reviewed and published in the Journal of Exposure Science & Environmental Epidemiology, *id.* at 20:6-14, 144:11–146:23; 239:18–240:15; 402:11-17.

1. Dr. Chief’s Professional Experiences Qualify Her in the Subject Area of Socio-Hydrology.

The United States challenges Dr. Chief’s qualifications to the extent they may be based on her personal lived experience as a member of the Navajo Nation, claiming that such experience is no different from that of the *Allen* Plaintiffs. Motion at 8-9. However, this argument wholly ignores the significant *professional* experiences that uniquely qualify Dr. Chief.

² The field “of socio-hydrology is a special case of social-ecological systems research that focuses on coupled human-water systems, exploring how the hydrologic cycle and human cultural traits coevolve and how such co-evolutions lead to phenomena of relevance to water security and sustainability.” David J. Yu, et al, *Socio-hydrology: An Interplay of Design and Self-Organization in a Multilevel World*, Ecology and Society (2020).

An expert witness' experience can significantly expand the scope of qualified subjects. In *United States v. Marshall*, the court determined that a pediatrician was clearly qualified to testify as an expert on "the nature and structure of a sex trafficking operation, including recruitment, grooming, manipulation and control of sex trafficking victims" based on her "extensive medical training in pediatrics, decades of on-the-job experience, and specialized knowledge reflected in peer-reviewed publications, other publications and expert reports, and dozens of lectures on the dynamics of child sex trafficking and victimization." 946 F.3d 591, 594-95, 97 (D.C. Cir. 2020) (internal quotation marks omitted). In other words, through professional experiences and research, reflected in peer-reviewed publications, a pediatrician was qualified to opine in the related area of sex trafficking of children. *Id.*

Similarly, Dr. Chief's expertise is not limited to her doctorate degree in the field of hydrology. *See Ex. 3* at 1 (Dr. Chief's Curriculum Vitae). Dr. Chief is well qualified as a socio-hydrologist by her years of professional experiences, research, and presentations within the field, as reflected in her peer-reviewed publications on socio-hydrology. *See Ex. 2* at 28:12-22; Dr. Van Horne, Dr. Chief, et al., *Impacts to Diné activities with the San Juan River after the Gold King Mine Spill*, 31 J Expo Sci Environ Epidemiol 852 (2021); *Ex. 3* at 23-33 (listing over 95 presentations). The fact that Dr. Chief was selected to help lead federally funded research on the social impacts of the Spill demonstrates her extensive qualifications in the field of socio-hydrology. Dr. Chief's professional experiences include not only the hard science of hydrology but also expertise and in the interdisciplinary social and public policy aspects of water, particularly within tribal communities; specifically, Dr. Chief's work at University of Arizona's Hydrology, Department of Environment Science include:

1. Associate Professor, **American Indian Studies Graduate Interdisciplinary Graduate Program (GIDP)**, 2012-Present;

2. Associate Professor, Mel & Enid Zuckerman College of Public Health, **Community, Environment and Policy Department**, 2019-Present;
3. Executive Faculty Committee and Admissions Committee, School of Natural Resources and the **Environment, Water, Society, and Policy** Master of Science Degree Program, 2011-2017;
4. Affiliate Assistant Professor, **American Indian Studies**, 2012-Present; and

Ex. 3 at 1-2. Dr. Chief has a national profile for her work on community-based tribal research,

Ex. 1 at 3, as evidenced by her numerous research grants on issues concerning socio-hydrology,

including the following federally funded research projects:

1. National Science Foundation, *Broadening Career Pathways in Food, Energy, and Water* Systems with and within Native American Communities;
2. United States Department of Agriculture, *Decision support for agricultural reuse of municipal wastewater effluent in the Navajo Nation*;
3. National Institute of Health, *Understanding Navajo Concerns to the Gold King Mine Spill*;
4. National Institute of Environmental Health Sciences, *Risk perception of Navajo farming communities impacted by the Gold King Mine Spill*;
5. United States Geological Survey, *Pyramid Lake Paiute Tribe Traditional Knowledge and Climate Adaptation*;
6. United States Department of Agriculture, *Enhancing Climate Resiliency for Agricultural Production on American Indian Lands of the Great Basin Desert*;
7. National Institute of Environmental Health Sciences, *Tó'Łitso, the water is yellow: Investigating short-term exposure and risk perception of Navajo communities to the Gold King Mine Toxic Spill*;
8. Funding Agency: National Oceanic and Atmospheric Administration (NOAA), Sectoral Applications Research Program (SARP) Climate and Societal Interactions Div., *Incorporating climate information and stakeholder engagement in groundwater resources planning and management*;
9. United States Geological Survey, *Climate Change Vulnerability of Native Americans in the Southwest: Pyramid Lake Paiute Tribe*;

Ex. 3 at 72-73, 75-78. She is experienced conducting interdisciplinary research in collaboration with social science experts and has worked with numerous tribes and various intertribal entities and organizations. **Ex. 2** at 15:5-12, 22:23-23:4. Her professional experiences, in addition to her individual experiences, provide her with expertise in Navajo culture specifically. *Id.* at 20:16-21:6.

2. Dr. Chief's Opinions Are Within Her Subject Area of Socio-Hydrology.

The United States' Motion fundamentally mischaracterizes the scope of Dr. Chief's expertise and source of that expertise. Despite the fact that Dr. Chief is an expert researcher in the field of socio-hydrology, "the science investigating the dynamics and co-evolution of coupled human-water systems," **Ex. 1** at 3, the United States incorrectly claims that Dr. Chief has only a "hydrology background," and therefore her opinions are not reasonably within the scope of her field. Motion at 8. However, Dr. Chief's opinions do not require expertise in "agriculture, economics, sociology, anthropology, theology, psychology, medicine, or toxicology," as the United States suggests, *id.*, because her opinions are within her field of expertise: the interdisciplinary study of the dynamics of human-water systems. Moreover, Dr. Chief testified about the collaborative, interdisciplinary nature of her research, which incorporates the expertise from numerous fields, including exposure science, medical anthropology, Native American studies, education, and environmental science:

So the way it works in scientific studies is that we work as a team and we all collaborate, we communicate, we work together on the project and the different goals and we have different expertise. So we have a wide range of expertise on the team from exposure science, to medical anthropology, to Native American studies, to education, as well as environmental science. So, no one person does every single step of the project, which would be inefficient. So we work collaboratively across our disciplines to communicate our approach and work -- then work within our expertise to ensure the steps are done, you know, adequate -- adequately, and then presenting it back to the entire team and then -- and then that's how we move forward. And so not one person does every single step of every single aspect of the project, which would be very inefficient. And the team is -- is meant to be collaborative in our disciplinary leveraging the individual expertise of each researcher.

Ex. 2 at 157:4-25.

The United States cites one case in support their argument that Dr. Chief's opinions are outside the confines of her expertise: *Ralston v. Smith & Nephew Richards, Inc.*, 275 F.3d 965 (10th Cir. 2001). *See* Motion at 8 ("In *Ralston*, the Tenth Circuit upheld the exclusion of an

orthopedist's expert opinion on a particular procedure on the basis of the expert's own admissions that she was not an expert in that procedure." In *Ralston*, the medical expert did "absolutely no research on the intramedullary nailing," was "never published in any matter" regarding the nailing procedure," and had otherwise never dealt with or address the procedure. *Id.* at 969. Under those circumstances, the expert was properly deemed unqualified to testify about the at-issue procedure. Here, as discussed above, Dr. Chief has held four professorships specializing in the social impact of water in communities, including tribal communities, and received nine federally funded grants for socio-hydrology research projects; she has also published numerous articles and received many awards for her interdisciplinary work in the social and public policy aspects of water. *See Couture v. Bd. of Educ. of Albuquerque Pub. Sch.*, 2007 WL 9734358, at *4 (D.N.M. Mar. 28, 2007) ("With respect to an expert's qualifications, courts consistently have recognized that expert testimony need not be based solely upon scientific training or education; rather, an expert may be qualified in various ways."). The testimony cited by the United States, however, only relates to Dr. Chief's acknowledgement that she does not hold a specific degree in the fields of agriculture, economics, theology, psychology, medicine, or toxicology. *See* Motion at 8. As discussed above, Dr. Chief is well qualified in the interdisciplinary field of socio-hydrology and community-based research, and such specific degrees are not necessary. *See id.* at *4. For these reasons, Dr. Chief has adequately explained "how [her] experience leads to the conclusion reached, why that experience is a sufficient basis for the opinion, and how that experience is reliably applied to the facts." *See id.* at *6 (ruling that a doctor with fifteen years of examining children who have been hospitalized" was qualified to testify about a child's coping capacity and stressors even though he was not formally "trained to testify about causation generally or the causes of hospitalization specifically."). Because Dr.

Chief's opinions are well within the contours of her expertise, the United States' argument should be rejected.

3. Dr. Chief's Opinions Are Not Impermissible Parroting.

An expert may “base an opinion on facts or data in the case that the expert has been made aware of or personally observed . . . if experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject[.]” Fed. R. Evid. 703. The United States accuses Dr. Chief of merely “parroting” the opinions of others, claiming that she is like the expert in *TK-7 Corp. v. Estate of Barbouti*, 993 F.2d 722, 732-733 (10th Cir. 1993), whose testimony failed to meet the requirements of Rule 703. Motion at 11-12. In essence, the United States disregards Dr. Chief's own peer-reviewed research and attempts to read into the caselaw a requirement that an expert can only rely on data gathered through a survey that the expert herself designed and collected. *Id.* This is simply not the holding of *TK-7*, nor is there such a requirement in the Rules of Evidence.

In *TK-7 Corp.*, the Tenth Circuit reviewed the district court's grant of a directed verdict based on the plaintiff's failure to present any admissible evidence regarding lost profit damages. *Id.* at 730. One potential source of evidence of lost profits was the plaintiff's expert, who calculated lost profits by assuming sales projections created by another person. *Id.* at 732. The Tenth Circuit held that the expert failed to meet the minimum requirements of Rule 703 because the expert professed no expertise in sales projections, had no familiarity with the methods or reasoning used in creating the sales projections, and knew “little or nothing” about the person who created the sales projections he relied on. *Id.* The Court found this was not “reasonable reliance” because lost profits the expert opined to were “wholly dependent upon a projection of

future sales,” therefore, the expert wholly relied on the unknown work of another person to determine the issue he expressed an opinion on. *Id.*

Dr. Chief’s opinions bear little resemblance to those offered in *TK-7*. Her opinions are not a recitation of data gathered in an unknown manner by unknown third parties in a field wholly outside her own—her opinions are based on her peer-reviewed interdisciplinary research she conducted collaboratively with a team of experts studying the multifaceted social impacts of the Gold King Mine Spill. There is no requirement that Dr. Chief independently verify every piece of data that she relied on in forming her opinion, whether it be the surveys conducted as part of the Diné Exposure Project or the peer-reviewed articles that she read as part of her research. Rather, the standard is that she employs the level of intellectual rigor that characterizes the practice of an expert in her field, *Dodge*, 328 F.3d at 1222-23, *see also* Fed. R. Evid. 703, a standard Dr. Chief’s research and opinions most certainly meet.

B. Dr. Chief’s Opinions Are Relevant and Helpful to the Trier of Fact.

Rule 702 requires that an expert’s opinion “help the trier of fact to understand the evidence or to determine a fact in issue.” This rule “dictates a common-sense inquiry of whether a juror would be able to understand the evidence without specialized knowledge concerning the subject.” *United States v. Muldrow*, 19 F.3d 1332, 1338 (10th Cir. 1994). The commentary to Rule 702 states that the relevant inquiry for expert witnesses is “whether the untrained layman would be qualified to determine intelligently and *to the best possible degree* the particular issue without enlightenment from those having a specialized understanding of the subject involved in the dispute.” Fed. R. Evid. 702 (emphasis added) (internal citation omitted).

The United States claims that that Dr. Chief’s opinions are not relevant or helpful because her opinions are not specific to the *Allen* Plaintiffs. Motion at 12. However, Dr. Chief’s

opinions are relevant and helpful because her opinions provide helpful context regarding (1) the reasonableness of the *Allen* Plaintiffs' post-Spill conduct and damages; and (2) how individual *Allen* Plaintiffs' choices were consistent with the measured behaviors regarding risk-perception, stigma, annoyance and disturbance, and loss of use and enjoyment.

1. Dr. Chief's Opinions Provide Helpful Context for a Jury to Determine Reasonableness.

Dr. Chief will not, as suggested by the United States, offer opinions as to whether any individual *Allen* Plaintiff did, nor did not, suffer noneconomic damages or the value of their damages. *See* Motion at 12 ("the pertinent factual inquiry is whether each individual *Allen* Plaintiff suffered damages for annoyance and loss of use of their property. Dr. Chief's Opinions do not address that inquiry."). Such an inquiry is not appropriate for an expert witness; the *Allen* Plaintiffs will testify about their unique noneconomic experiences and the fact finder will assign damages for the annoyance, disturbance, and loss of use and enjoyment suffered by each *Allen* Plaintiff.

Defendants have made an issue out of whether the *Allen* Plaintiffs' "personal choice" to not use water from the San Juan River after the Spill was reasonable. *See* Dkt.1475; *Eastman Kodak Co. v. Westway Motor Freight, Inc.*, 949 F.2d 317, 320 (10th Cir. 1991) (Holding that a plaintiff's duty to mitigate damages involves taking "reasonable steps under the circumstances of the particular case to mitigate its damages."). Defendants further claims that there was no "interference" with the *Allen* Plaintiffs' use of their land after restrictions on water use were lifted, but the *Allen* Plaintiffs testified that were unable to resume farming after water restrictions were lifted for a variety of reasons, including distrust of water quality and stigma among consumers of crops irrigated by the San Juan River. *See* Dkt. 1475 at 18 (alleging that "[a]fter the restrictions on irrigation, livestock, and other uses were lifted, the spill resulted in no physical

impediment to or interference with the plaintiffs’ use of their properties”); Dkt. 1552 at 4-20, ¶¶ 2-30 (describing the different ways that the 25 bellwether *Allen* Plaintiffs’ experienced interference with the use of their properties, often times years after the Spill, and in some cases, still exist currently).

In addition to her research documenting the significant social disruptions caused by the Spill, Dr. Chief’s opinions provide context and historical background on a community that is in many ways “closed” to the average juror. *See United States v. Garcia*, 793 F.3d 1194, 1213 (10th Cir. 2015) (recognizing expert testimony that describes “the inner workings of a closed community”); *United States v. Young*, 916 F.3d 368, 381 (4th Cir. 2019) (concluding that an expert’s testimony was relevant and helped the jury “by providing context for the historical backgrounds of and connection between Nazism and militant Islamism” in a case that touched “on a wide variety of ideas, terms, people, and organizations connected to radical Islam”).

Dr. Chief’s opinions provide necessary information about the circumstances of this case to “help the trier of fact to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702. This includes her expert opinions on the historical trauma that informed risk perception of Navajo farmers along the River, measured perceptions regarding stigma, and the historical nature of the relationship between Navajo people and the River. **Ex. 1** at 2. Although individual *Allen* Plaintiffs will provide direct evidence of their individual choices and damages, Dr. Chief’s opinions will equip a fact finder with the necessary cultural and historical context to understand the evidence presented by individual *Allen* Plaintiffs and determine the reasonableness of their decisions after the Spill.

2. Dr. Chief’s Opinions Demonstrate that Individual *Allen* Plaintiffs’ Decisions and Risk Perceptions Were Consistent with the Measured Risk Perceptions and Behavior of Similarly-Situated River Users.

The United States conflates context with credibility and argues that Dr. Chief’s testimony would usurp the jury’s role in determining credibility. Motion at 13-14. “In general, expert testimony which does nothing but vouch for the credibility of another witness encroaches upon the jury’s vital and exclusive function to make credibility determinations, and therefore does not ‘assist the trier of fact’ as required by Rule 702.” *United States v. Charley*, 189 F.3d 1251, 1267 (10th Cir. 1999). However, the Tenth Circuit has recognized that an expert may testify that the actions of another witness are *consistent with* a scenario that the expert has studied; for example, it is permissible for an expert witness to opine that someone’s behavior is “consistent with” that of a domestic abuse victim, and such testimony does not usurp a fact finder’s role in determining credibility. *United States v. Chapman*, 839 F.3d 1232, 1239 (10th Cir. 2016).

Here, Dr. Chief’s opinions do not impermissibly bolster the testimony of the *Allen* Plaintiffs—her opinions relate to measured risk perceptions and behavior regarding the social impacts of the Gold King Mine Spill and provide context that allows the jury to make fully informed decisions regarding the *Allen* Plaintiffs individually. The fact that individual *Allen* Plaintiffs’ injuries were consistent with the results documented by Dr. Chief does not transform her expert socio-hydrology opinion into an inadmissible opinion regarding credibility. The Tenth Circuit has recognized that an expert may present testimony regarding how an individual’s injuries compare to larger trends of similar injuries, *see e.g. Chapman*, 839 F.3d 1232, 1239, and here, Dr. Chief’s testimony does just that.

Further, in a single sentence, the United States invokes Rule 403 and argues that the context provided by Dr. Chief would result in unfair prejudice because each person interviewed as part of the Diné Exposure Project was not subject to discovery and cross-examination. Motion at 19. This argument is without merit. Rule 403 calls for the exclusion of evidence when the

“probative value is substantially outweighed by a danger of . . . unfair prejudice[.]” Fed. R. Evid. 403. Unfair prejudice is “an undue tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one.” *United States v. Rodella*, 804 F.3d 1317, 1334 (10th Cir. 2015) (internal quotation marks and citation omitted). As discussed throughout this Response, Dr. Chief’s testimony has significant probative value, and there is minimal, if any, likelihood of unfair prejudice for lack of discovery and cross examination of each person who participated in Dr. Chief’s study. Defendants had the opportunity to depose Dr. Chief for three full days, documentation related to her research has been produced, and Defendants will have the opportunity to cross-examine Dr. Chief at trial on the facts underlying her opinions. To reason that in order for an expert to present an opinion based on interviews and focus groups, each participant must be available for discovery and cross examination, would create absurd results and effectively prohibit experts from relying on peer-reviewed studies that include data gathered from non-party individuals.

C. Dr. Chief’s Opinions Are Reliable.

Rule 702 requires that an expert’s testimony is based on sufficient facts or data, the product of reliable methodology, and reliably applied to the facts of the case. Fed. R. Evid. 702(b)-(d). The United States argues that Dr. Chief’s opinions are inadmissible because her research allegedly did not consider sufficient facts and data regarding the *Allen* Plaintiffs and because her research alleged used unreliable methodology. Motion at 14.

1. Dr. Chief Relied on Sufficient Facts and Data in Forming Her Opinions.

Rule 702’s requirement that experts base their testimony on sufficient facts or data calls for a quantitative rather than qualitative analysis. Fed. R. Evid. 702 (Comment to 2000 amendments), *see also United States v. Lauder*, 409 F.3d 1254, 1264 n.5 (10th Cir.2005). “An

expert must base her opinion on at least the amount of data that a reliable methodology demands.” *Republican Party of New Mexico v. Balderas*, No. 11-CV-900-WJ-KBM, 2021 WL 5578869, at *3 (D.N.M. Nov. 30, 2021) (citing Charles Alan Wright & Arthur R. Miller, Fed. Prac. & Proc. Evid. § 6268 (2d ed. Apr. 2021)); see also *United States v. Crabbe*, 556 F. Supp. 2d 1217, 1223 (D. Colo. 2008) (stating that the question of sufficient facts and data “examines only whether the witness obtained the amount of data that the methodology itself demands”).

The United States argues that because Dr. Chief failed to review all depositions of the *Allen* Plaintiffs, her opinions are inadmissible, pointing to individual Plaintiffs whose behaviors varied from the behaviors Dr. Chief’s research documented, such as the need to haul water and interference with spiritual practices. Motion at 15-16. As stated above, however, this argument fundamentally mischaracterizes the nature of Dr. Chief’s opinion. Dr. Chief’s testimony is not intended reflect on the *Allen* Plaintiffs individually, but will help provide relevant context for the jury to better assess the reasonableness of their decisions to not use the River after the Spill. The United States’ arguments concerning insufficient facts and data specific to the *Allen* Plaintiffs is therefore misplaced and should be rejected by this Court.

2. Dr. Chief Applied Reliable Principles and Methods.

An expert must have sufficient expertise to select and apply a methodology and the selected methodology must be reliable and reliably applied. See *Mitchell v. Gencorp Inc.*, 165 F.3d 778, 781 (10th Cir.1999), *Daubert*, 509 U.S. at 595; see also *Dodge*, 328 F.3d at 1222 (10th Cir.2003). Once it is established that a methodology is generally reliable, technical deficiencies or suggestions that additional testing was necessary to support a conclusion go to the weight of the expert’s opinion, not the admissibility. See *Brunswick Corp. v. Spinit Reel Co.*, 832 F.2d 513, 523 (10th Cir. 1987) (“technical and methodological deficiencies” in survey do not relate to

admissibility of survey, but go to weight of the survey). Many factors bear on “assessment of whether the reasoning or methodology underlying [an expert’s] testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.”

Daubert, 509 U.S. at 592-93; *see also Kumho Tire Co.*, 526 U.S. at 149 (holding that the general principles in *Daubert* apply to all experts under Rule 702). Although *Daubert* requires “a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue,” *Daubert*, 509 U.S. at 592-93, it “generally does not, however, regulate the underlying facts or data that an expert relies on when forming her opinion.” *United States v. Lauder*, 409 F.3d 1254, 1264 (10th Cir. 2005). “[T]he purpose of the *Daubert* [reliability] inquiry is always the same: to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Hollander v. Sandoz Pharms. Corp.*, 289 F.3d 1193, 1206 (10th Cir. 2002) (internal quotation marks and alterations omitted) (citing *Kumho Tire*, 526 U.S. at 152). The Supreme Court has suggested peer review and publication as pertinent considerations because publication “increases the likelihood that substantive flaws in methodology will be detected.” *Daubert*, 509 U.S. at 593.

All of the so-called design deficiencies alleged by the United States go to weight, not admissibility. *See TV Interactive Data Corp. v. Sony Corp.*, 929 F. Supp. 2d 1006, 1021–22 (N.D. Cal. 2013) (“The Court notes from the outset, however, that Sony’s criticism of the survey designs is more appropriate for consideration by a jury, rather than the Court on a *Daubert* motion. The Ninth Circuit has stated that ‘[u]nlike novel scientific theories, a jury should be able to determine whether asserted technical deficiencies undermine a survey’s probative value.’”

(quoting *Southland Sod Farms v. Stover Seed Co.*, 108 F.3d 1134, 1143 n. 8 (9th Cir.1997); *Clicks Billiards, Inc. v. Sixshooters, Inc.*, 251 F.3d 1252, 1263 (9th Cir. 2001) (“[I]ssues of methodology, survey design, reliability, the experience and reputation of the expert, critique of conclusions, and the like go to the weight of the survey rather than its admissibility.”); *Johnson & Johnson-Merck Consumer Pharmaceuticals Co. v. Rhone-Poulenc Rorer Pharmaceuticals, Inc.*, 19 F.3d 125, 134 (3rd Cir. 1994) (“The probative value of a consumer survey is a highly fact-specific determination and a court may place such weight on survey evidence as it deems appropriate.” (quotation and citation omitted)); *Fortune Dynamic, Inc.*, 618 F.3d at 1037–38 (9th Cir. 2010) (“[T]he Marylander survey has a number of shortcomings, including the fact that it was conducted over the internet (thereby failing to replicate real world conditions), may have been suggestive, and quite possibly produced counterintuitive results. But these criticisms, valid as they may be, go to issues of methodology, survey design, reliability, . . . [and] critique of conclusions, and therefore go to the weight of the survey rather than its admissibility.” (citation and internal quotation marks omitted)); *Sentius Int’l, LLC v. Microsoft Corp.*, No. 5:13-cv-00825-PSG, 2015 WL 331939, at *2 (N.D. Cal. Jan. 23, 2015) (denying *Daubert* motion to exclude expert’s survey and related testimony because “issues of methodology, survey design, reliability, the experience and reputation of the expert, critique of conclusions, and the like go to the weight of the survey rather than its admissibility.”).

As a preliminary matter, the United States attempts to improperly use the Federal Judicial Center’s *Reference Manual on Scientific Evidence* for bright-line admissibility thresholds. *See* Motion at 18-19. Such use of the Reference Manual is contrary to the text itself. In the Preface to the Reference Manual, judges are “caution[ed] . . . regarding the proper use of the reference guides,” and despite the United States’ implications otherwise, the *Reference Manual* is

not intended to instruct judges concerning what evidence should be admissible or to establish minimum standards for acceptable scientific testimony. Rather, [the *Reference Manual*] can assist judges in identifying the issues most commonly in dispute in these selected areas and in reaching an informed and reasoned assessment concerning the basis of expert evidence.

Reference Manual on Scientific Evidence (Federal Judicial Center 3d ed. 2011) page xv.

The United States' Motion acknowledges in passing the general rule that a survey's methodological deficiencies relate to the weight not the admissibility of the evidence, but argues that the evidence underlying Dr. Chief's opinions is so deficient that it is not reliable and should be excluded as the courts did in *Winning Ways, Inc. v. Holloway Sportswear, Inc.*, 913 F. Supp. 1454 (D. Kan. 1996) and *Vail Assocs., Inc. v. Vend-Tel-Co., Ltd.*, 516 F.3d 853 (10th Cir. 2008). Motion at 18-19. However, both of these cases are factually distinct from the one at hand.

In *Winning Ways*, a Kansas district court examined customer survey evidence as part of a trade dress infringement claim, an element of which required proof that potential customers were likely to be confused. 913 F. Supp. at 1462. The consumer survey, commissioned by the plaintiff, suffered from serious fundamental methodological deficiencies; this included creation of consumer product familiarity—something the survey attempted to measure—through the administration of the survey itself and by presenting buyers with trade dress that differed from the trade dress at issue in the case. *Id.* at 1465, 1470. In contrast, Dr. Chief's study examined the effects of the Spill on three Navajo communities and the risk perception of Navajo farmers through both quantitative and qualitative means: listening sessions, focus groups, household questionnaires, a farming survey, and a review of academic literature. **Ex. 2** at 24:22-25:3, **Ex. 1** at 4. Unlike the survey in *Winning Ways*, Dr. Chief's research did not *create* the perceptions that were the intended subject of study, nor did her research measure perceptions of subjects different from those at issue in the case.

In *Vail*, the Tenth Circuit held it was not an abuse of discretion for the district court to exclude the plaintiff's market research survey evidence based on un rebutted testimony, from a witness with decades of market research experience, that the survey suffered from systemic design flaws that utterly failed to comply with generally accepted survey principles. 516 F.3d 853, 864 n.8. In stark contrast to the *Vail* defendants who presented un rebutted evidence of systemic survey design flaws, the United States simply relies on the *Reference Manual* for bright-line thresholds of admissible evidence—the kind of reliance that the *Reference Manual* cautions against. Fundamentally, Dr. Chief is not simply presenting survey data survey, she is presenting her expert opinion, based on her independent research. The United States' attempts to characterize Dr. Chief's research as simply survey data is a gross oversimplification of the interdisciplinary, nuanced nature of her methodology and the complexity of the issues studied. Furthermore, although the United States retained two experts to rebut Dr. Chief's report, the United States does not rely on either experts' report or testimony to challenge Dr. Chief.

Dr. Chief has twelve years of experience and training from experts in survey design, and the results of her survey research have been peer-reviewed and published. **Ex. 2** at 25:9-26:9, 26:15-23, 28:12-22. She testified that, consistent with practices of transdisciplinary research, she collaborated with other experts and used her own scientific expertise to select the research methodology used, and that each team member was trained in statistical analysis. *Id.* at 167:17-168:20, 169:7-17, 170:1-7, 170:15-19. Her independent research was not designed for litigation, but rather to help non-Native regulators understand the “cascading impacts” caused by the Gold King Mine Spill and the role of historical trauma in farmers' decisions to not return to farming after the water was deemed safe by some governments for agricultural use. *Id.* at 184:5-22, 185:11-18, 186:14-21. Her research was funded and approved by numerous government and

academic entities, was subjected to the peer-review process, and then published. In sum, Dr. Chief's work meets the standards of her field.

The United States' Motion takes issue with minor aspects of the data collection methods underlying the evidence that Dr. Chief relies on—issues that are appropriate for cross-examination, not for a motion to exclude. Specifically, the United States complains that the surveys and focus groups are “in contravention of industry best practices” because (i) they used small, non-random samples, (ii) did not control for potential bias, and (iii) the household questionnaire design is flawed. Motion at 20-26. In support of these arguments, the United States mischaracterizes Dr. Chief's testimony or omits pertinent portions thereof.

The United States incorrectly claims that Dr. Chief was unable to provide “an accurate description” of the inclusion criteria because it slightly changed from the initial research protocol (which spelled out the inclusion criteria and was approved by the Navajo Nation Human Health Review Board) as the research project moved forward. Motion at 20-21. As testified by Dr. Chief, the original inclusion criteria was as follows:

The target population was selected to account for the diversity of community members across the San Juan River that was impacted by the Gold King Mine spill. We selected Upper Fruitland because it's the first Navajo Chapter along the San Juan River. And this -- some of the community members did return to farming after the San Juan River was deemed to be agricultural standards of use. We selected Shiprock Chapter because this chapter is further downstream. It's a chapter that voted and -- voted to approve a chapter resolution that was to declare that the community -- the chapter would not -- that would keep their irrigation diversions closed for one year. . . . And then the last community is Aneth Chapter, which is further downstream, located in Utah. And this is also another chapter that's very different from Upper Fruitland and Shiprock, in that they don't have the same extensive farm plots and irrigation ditches as upstream. And the community ended up having more of their population that engage in ranching, and they do more of the community farming versus individual farming.

Ex. 2 at 95:2–96:7.

Dr. Chief continued to explain the ways in which the inclusion criteria changed as the research project progressed during the following exchanges.

A. . . . [I]initially, we had planned to have two different subgroups for each community where one group included sub-subsistence land users and the other group nonsubsistence land users. So that included criteria was changed in -- in an amendment that was submitted in February of 2016.

Q. And what was it changed to?

A. We changed it to an individual that was living in the three communities.

. . .

Q. Did you make any other changes in the initial design of your project?

A. I think we refined some of the aspects of the application with the amendments and that's what we do in a research study is that your initial application is approved and then you submit amendments for changes and those amendments happen all throughout the course of the research project.

. . .

Q. How many amendments were made to this project?

A. I don't recall the exact number of amendments that were made. All of that was submitted. You should have access to that, I would assume, but if I can just estimate from the top of my head, it's probably over 30 different amendments that were made over the course of the project.

Id. at 69:22–70:24; 71:8–72:3.³

For the household questionnaires specifically, Dr. Chief explained that the inclusion criteria were Navajo members, “abiding in one of the participating Navajo chapters, living within . . . one mile of the San Juan River and having a child,” criteria which was “slightly revised,” as is “typical of . . . a scientific study” when researchers understand the community more fully. *Id.* at 173:21–174:16. Accordingly, the United States’ position that the Court cannot “evaluate whether the sample is reliable of the target population” without “an accurate description of the sample criteria” is unfounded. Motion at 21. Dr. Chief explained the criteria at length during her deposition.

³ To ensure that opposing counsel had a full and fair opportunity to examine Dr. Chief on the amendments, the *Allen* Plaintiffs made Dr. Chief available for an additional, third day of examination.

Relatedly, the United States’ argument that the sample size “was too small to provide reliable results” misapprehends the purpose of the project and the target population. Motion at 21. Contrary to what the United States suggests, Dr. Chief’s did not endeavor to survey the entire Navajo Nation. *See id.* (“Dr. Chief relied on 59 households and 38 farmers for her sweeping conclusions, while there are more than 44,600 households and more than 14,400 farms on the Navajo Nation.”). Instead, Dr. Chief carefully crafted a target population (inclusion criteria) that would yield the best data on the short-term impacts of the Spill and the resultant changes in engagement with the River by choosing three chapters that routinely use and rely on River water.

Next, the United States faults Dr. Chief for not recording “any data indicating the number of households they approached, the number who refused, or the number who were ineligible.” Motion at 22-23. According to the United States, such an omission renders Dr. Chief’s opinions inadmissible because the “potential bias” rate is unknown. *Id.* As part of Dr. Chief’s research, all human subject data that was collected for the project was “protected by the certificate of confidentiality by the National Institute of Health,” meaning that no identifying information whatsoever could be provided. **Ex. 2** at 97:13-16. Dr. Chief thus explained:

We did not collect information about individuals that refused to be part of the study, nor did we retain any information about where they live, who they are. We are not allowed to collect any information of individuals that did not consent to participate in a study, per national and global rules related to human research, subjects research.

Id. at 500:1-7. What was known to the United State, however, was how many houses were identified as potential human subject candidates (383) and what team members were assigned to approach each house. *See Ex. 4* (Sampling Maps Team Assignment Spreadsheet). Accordingly, even though Dr. Chief could not ethically disclose some of the information the United States claims is needed to evaluate reliability, information regarding response rate for the household

questionnaires could have been further evaluated or approximated by the United States during Dr. Chief's three days of testimony. Since the United States failed to do so, they are precluded from now arguing that the response rate cannot be known.

Lastly, the United States claims that the recruiting flyer was biased for including a "sensational" photograph of the Spill and that the household questionnaire was flawed for not including a "I don't know" option. Motion at 24-26. Regarding the flyer, Dr. Chief explained that a photograph was appropriate for their target population because English fluency is lower than average and the Navajo people are visual learners. *See Ex. 2* at 120:4–121:8 ("And so we were doing this -- the different types of recruitment methods that we could to ensure that we're casting a wide net within these communities that we were working with."). As it relates to the questionnaire design, Dr. Chief testified that there was a "don't know" option for respondents for whether they engaged in the activity and there was not a "don't know" option for duration because if a respondent selected "don't know" for the initial inquiry, they would not follow up with the remainder of the questioning specific to the activity. *Id.* at 229:13–231:11 ("The 'Did not know' initially in the engages activity before the spill, the 'Do not know,' that stops the -- the questioning at that point.").

III. CONCLUSION

For the reasons discussed above, the *Allen* Plaintiffs respectfully request that this Court deny the United States' Motion to exclude the expert testimony of Dr. Chief.

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CERTIFICATE OF SERVICE

I hereby certify that on June 9, 2022 the foregoing document was filed via the Court's CM/ECF system and a copy thereof was served electronically upon all counsel of record, as reflected by the Court's CM/ECF system.

/s/ Kate Ferlic

Kate Ferlic